



# ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025 for*  
**Nonset 400**  
**Nonset 400 FF**  
**Nonset 400 SR**



Programme:  
**The International  
EPD<sup>®</sup> System;**  
[www.environdec.com](http://www.environdec.com)

Programme  
operator:  
**EPD International AB**

EPD registration  
number:  
**S-P-01009**

Publication  
date:  
**2017-08-04**

Valid until:  
**2024-10-09**

Geographical  
scope:  
**International**

Revision:  
**2019-10-10**

Publisher: The Norwegian EPD Foundation  
Registration number: NEPD-1381-454-EN





## 1. COMPANY DESCRIPTION / GOAL & SCOPE

Founded in 1937 in Milan, Italy, Mapei produces adhesives and complementary products for laying all types of floor, wall and coating materials, and also specializes in other chemical products used in the building industry, such as waterproofing products, specialty mortars, admixtures for concrete, products for underground constructions and for the restoration of concrete and historical buildings.

There are currently 85 subsidiaries in the Mapei Group, with a total of 80 production facilities located around the world in 35 different countries and in 5 different continents. Mapei also has 31 central laboratories. Most locations are ISO 9001 and ISO 14001 or EMAS-certified.

Mapei's strategy of internationalization is based on two main objectives: being closer to local needs and lowering transportation costs. With the declared objective of being close to buyers and clients, Mapei's presence in the five continents enables the company to comply with the requirements of each location, and to use only locally-based managers and qualified personnel, without changing the approach of Mapei.

Mapei invests 12% in its company's total work-force and 5% of its turnover in Research & Development; in particular, 70% of its R&D efforts are directed to develop eco-sustainable and environmentally friendly products, which give important contribution to all major green rating systems for eco-sustainable buildings such as LEED and BREEAM.

Furthermore, Mapei has developed a sales and technical service network with offices all over the world and offers an efficient Technical Assistance Service that is valued by architects, engineers, contractors and owners.

The goal of the study is to provide necessary data and documentation to produce an EPD according to the requirements of PCR Environdec (version 2.3, 2018-11-15) under EN 15804:2014 and to have more comprehension about the environmental impacts related to **Nonset 400**, **Nonset 400 FF** and **Nonset 400 SR** manufactured in Mapei AS located in Sagstua (Norway), in year 2018, including packaging of the finished products.

Target audiences of the study are customers and other parties with an interest in the environmental impacts of **Nonset 400**, **Nonset 400 FF** and **Nonset 400 SR**.

This analysis shall not support comparative assertions intended to be disclosed to the public.

## 2. PRODUCT DESCRIPTION

**Nonset 400**, **Nonset 400 FF** and **Nonset 400 SR** are cement-based dry mortars, which expand 1 – 3 % before setting. The mortars are composed of cement, well-graded sand, expanding, stabilising and plasticizing substances. Nonset 400 FF contains also additives which ensure that the cement sets and will not crack even at surface and air temperatures down to -10°C.

Nonset, Nonset 400 FF and Nonset 400 SR are used for all types of foundations and concrete repairs in thicknesses up to 150 mm.

The three products meet the requirements defined by EN1504-9 “Products and systems for the protection and repair of concrete structures - Definition, Requirements, quality control and evaluation of conformity - General principles for the use of products and systems” and the minimum requirements claimed by EN1504-3 “Repair mortar for load bearing and nonload bearing repairs, classR4”.

They are supplied in 25 kg multiply bags or in big bags with 1000 kg of finished product.



## 3. CONTENT DECLARATION

The main components and ancillary materials of **Nonset 400**, **Nonset 400 FF** and **Nonset 400 SR**, are the following:

Table 1: Composition

Materials	Percentage (%)
Binders	< 40
Fillers	< 70
Other (Additives & Packaging)	< 3

The products contain neither carcinogenic substances nor substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency, in a concentration higher than 0,1 % (by unit weight).

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## 4. DECLARED UNIT AND REFERENCE SERVICE LIFE

The declared unit is 1 kg of powder (packaging included).

Packaging materials include:

- Wooden pallet
- Multiply bags (paper/PE/paper)
- PP (bigbags)
- LDPE used as wrapping material

Due to the selected system boundary, the reference service life of the products is not specified.

## 5. SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The approach is “cradle to gate” with options. The following modules have been considered:

- A1-A3 (Product stage): extraction and transport of raw materials, packaging included, production process;
- A4 (Construction stage): transport of the finished product to final customers.

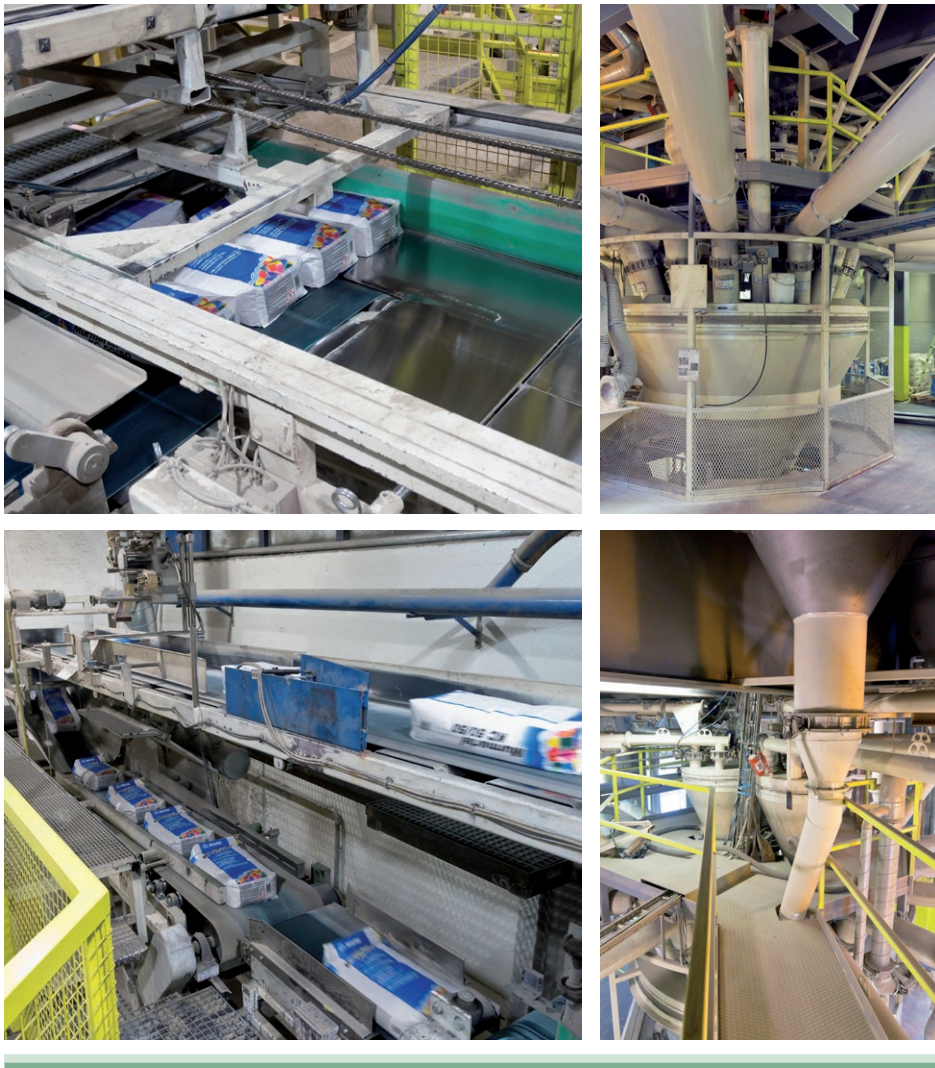
Table 2: System boundaries

System Boundaries														
A1 – A3			A4 – A5		B1 – B7					C1 – C4				D
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE					END OF LIFE STAGE				
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	
Raw Material Supply	Transport	Manufacturing	Transport	Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Deconstruction/ Demolition	Transport	Waste Processing	Disposal	Reuse-Recovery- Recycling-potential
					B6	Operational Energy Use								
					B7	Operational Water Use								

included
  excluded

A brief description of the production process, is the following:

Figure 1: Production process detail - © Photo Halvor Gudim



The production process starts from raw materials, that are purchased from external and intercompany suppliers and stored in the plant. Bulk raw materials are stored in specific silos and added automatically in the production mixer, according to the formula of the product. Other raw materials, supplied in bags or big bags, are stored in their warehouse and added automatically or manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The semi-finished product is then packaged in bags, put on wooden pallets, covered by stretched hoods and stored in the Finished Products' warehouse. The quality of final products is controlled before the sale.

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Figure 2: Sagstua Plant



Table 3: Transport to the building site (A4)

Name	Value	Unit
Means of transport: truck euro 3 with 27 tons of payload		
Litres of fuel (truck)	~ 2E-03	l/DU*100km
Transport distance (weighted average)	300	km
Capacity utilisation (including empty runs)	85	%
Capacity utilisation volume factor	100	%

DU: declared unit

## 6. CUT-OFF RULES AND ALLOCATION

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied in order to hide data.

The procedure of exclusion of inputs and outputs is the following:

- All inputs and outputs to a unit process, for which data are available, are included in the calculation
- Cut-off criteria, where applied, are described in Table 4

Input flows are covered for the whole formula.

Table 4: Cut-off criteria

Process excluded from study	Cut-off criteria	Quantified contribution from process
A3: production (auxiliary materials)	less than $10^{-5}$ kg/kg of finished product	Sensibility study demonstrates a contribute lower than 0,5%
A3: waste and particle emission	less than $10^{-5}$ kg/kg of finished product	Sensibility study demonstrates a contribute lower than 0,5%

For the allocation procedure and principles, consider the following table (Table 5):

Table 5: Allocation procedure and principles

Module	Allocation Principle
A1	All data are referred to 1 kg of product <ul style="list-style-type: none"> <li>• A1: electricity is allocated to the mortar department</li> </ul>
A3	All data are referred to 1 kg of packaged product <ul style="list-style-type: none"> <li>• A3-wastes: all data are allocated to the mortar plant</li> </ul>
A4	All data are referred to 1 kg of powder packaged product: <ul style="list-style-type: none"> <li>• A4: a weighted average scenario has been used</li> </ul>

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## 7. ENVIRONMENTAL PERFORMANCE AND INTERPRETATION



### **GWP<sub>100</sub>**

Global Warming Potential refers to the emission/presence of GHGs (greenhouse gases) in the atmosphere (mainly CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>) which contribute to the increase in the temperature of the planet.



### **AP**

Acidification Potential refers to the emission of specific acidifying substances (i.e. NO<sub>x</sub>, SO<sub>x</sub>) in the air. These substances decrease the pH of the rainfall with predictable damages to the ecosystem.



### **EP**

Eutrophication Potential refers to the nutrient enrichment of flowing water, which determines unbalance in aquatic ecosystems and causes the death of the aquatic fauna.



### **ODP**

Ozone Depletion Potential refers to the degradation of the stratospheric layer of the ozone involved in blocking the UV component of sunrays. Depletion is due to particularly reactive components that originate from chlorofluorocarbon (CFC) or chlorofluoromethanes (CFM).



### **POCP**

The Photochemical Ozone Creation Potential is the ozone formation in low atmosphere. This is quite common in the cities where a great amount of pollutants (like VOC and NO<sub>x</sub>) are emitted every day (industrial emissions and vehicles). It is mainly diffused during the summertime.



### **ADP<sub>e</sub> (elements)**

Abiotic Depletion Potential elements refers to the depletion of the mineral resources.



### **ADP<sub>f</sub> (fossil fuel)**








Abiotic Depletion Potential fossil fuel refers to the depletion of the fossil fuel resources.



Following tables show environmental impacts for the products considered according to CML methodology (2001 – Jan. 2016). All the results are referred to the declared unit (see § 4).

## Nonset 400

Table 6: **Nonset 400** (packaged with multiply bags) – Environmental categories

Environmental Category	Unit	A1 – A3	A4
 <b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	2,36E-01	1,61E-02
 <b>ADPe (element)</b>	(kg Sb eq.)	1,68E-07	1,30E-09
 <b>ADPp (fossil)</b>	(MJ)	1,45E+00	2,21E-01
 <b>AP</b>	(kg SO <sub>2</sub> eq.)	2,12E-04	9,56E-05
 <b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3</sup> eq.)	1,15E-04	2,42E-05
 <b>ODP</b>	(kg R-11 eq.)	9,92E-10	5,37E-15
 <b>POCP</b>	(kg ethylene eq.)	1,68E-05	-4,22E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPp**: Abiotic Depletion Potential (fossil)

Nonset 400  
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Table 7: **Nonset 400** (packaged with multiply bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	7,81E-01	1,11E-02
RPEM	MJ	-	-
TPE	MJ	7,81E-01	1,11E-02
NRPE	MJ	1,48E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	1,48E+00	2,22E-01
SM	kg	4,60E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	6,89E-04	2,53E-04




**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation; **TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier; **NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources; **SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels; **W** Net use of fresh water

Table 8: **Nonset 400** (packaged with multiply bags) – Waste production & other output flows

Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,60E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,93E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed

Table 9: **Nonset 400** (packaged with big bags) – Environmental categories

Environmental Category		Unit	A1 – A3	A4
	<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	2,45E-01	1,62E-02
	<b>ADPe (element)</b>	(kg Sb eq.)	1,67E-07	1,30E-09
	<b>ADPf (fossil)</b>	(MJ)	1,66E+00	2,22E-01
	<b>AP</b>	(kg SO <sub>2</sub> eq.)	2,68E-04	9,58E-05
	<b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3</sup> eq.)	1,19E-04	2,43E-05
	<b>ODP</b>	(kg R-11 eq.)	9,92E-10	5,39E-15
	<b>POCP</b>	(kg ethylene eq.)	2,09E-05	-4,23E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPf**: Abiotic Depletion Potential (fossil)

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Table 10: **Nonset 400** (packaged with big bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	7,13E-01	1,12E-02
RPEM	MJ	-	-
TPE	MJ	7,13E-01	1,12E-02
NRPE	MJ	1,71E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	1,71E+00	2,22E-01
SM	kg	4,58E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	7,54E-04	2,54E-04

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation;  
**TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier;  
**NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources;  
**SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels;  
**W** Net use of fresh water

Table 11: **Nonset 400** (packaged with big bags) – Waste production & other output flows








Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,62E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,94E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed



## Nonset 400 FF

Table 12: **Nonset 400 FF** (packaged with multiply bags) – Environmental categories

Environmental Category	Unit	A1 – A3	A4
 <b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	3,30E-01	1,61E-02
 <b>ADPe (element)</b>	(kg Sb eq.)	3,82E-07	1,30E-09
 <b>ADPf (fossil)</b>	(MJ)	1,99E+00	2,21E-01
 <b>AP</b>	(kg SO <sub>2</sub> eq.)	3,52E-04	9,56E-05
 <b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	2,13E-04	2,42E-05
 <b>ODP</b>	(kg R-11 eq.)	3,13E-09	5,37E-15
 <b>POCP</b>	(kg ethylene eq.)	3,32E-05	-4,22E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPf**: Abiotic Depletion Potential (fossil)

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Table 13: **Nonset 400 FF** (packaged with multiply bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	8,81E-01	1,11E-02
RPEM	MJ	-	-
TPE	MJ	8,81E-01	1,11E-02
NRPE	MJ	2,15E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	2,15E+00	2,22E-01
SM	kg	6,10E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	1,33E-01	2,53E-04








**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation;  
**TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier;  
**NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources;  
**SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels;  
**W** Net use of fresh water

Table 14: **Nonset 400 FF** (packaged with multiply bags) – Waste production & other output flows

Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,60E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,93E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed

Table 15: **Nonset 400 FF** (packaged with big bags) – Environmental categories

Environmental Category		Unit	A1 – A3	A4
	<b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	3,39E-01	1,62E-02
	<b>ADPe (element)</b>	(kg Sb eq.)	3,81E-07	1,30E-09
	<b>ADPf (fossil)</b>	(MJ)	2,21E+00	2,22E-01
	<b>AP</b>	(kg SO <sub>2</sub> eq.)	4,09E-04	9,58E-05
	<b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	2,17E-04	2,43E-05
	<b>ODP</b>	(kg R-11 eq.)	3,12E-09	5,39E-15
	<b>POCP</b>	(kg ethylene eq.)	3,73E-05	-4,23E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPf**: Abiotic Depletion Potential (fossil)

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Table 16: **Nonset 400 FF** (packaged with big bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	8,12E-01	1,12E-02
RPEM	MJ	-	-
TPE	MJ	8,12E-01	1,12E-02
NRPE	MJ	2,38E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	2,38E+00	2,22E-01
SM	kg	6,08E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	1,34E-01	2,54E-04

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation;  
**TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier;  
**NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources;  
**SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels;  
**W** Net use of fresh water

Table 17: **Nonset 400 FF** (packaged with big bags) – Waste production & other output flows








Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,62E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,94E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed



## Nonset 400 SR

Table 18: **Nonset 400 SR** (packaged with multiply bags) – Environmental categories

Environmental Category	Unit	A1 – A3	A4
 <b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	3,16E-01	1,61E-02
 <b>ADPe (element)</b>	(kg Sb eq.)	1,96E-07	1,30E-09
 <b>ADPf (fossil)</b>	(MJ)	1,87E+00	2,21E-01
 <b>AP</b>	(kg SO <sub>2</sub> eq.)	2,73E-04	9,56E-05
 <b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3-</sup> eq.)	1,59E-04	2,42E-05
 <b>ODP</b>	(kg R-11 eq.)	2,02E-09	5,37E-15
 <b>POCP</b>	(kg ethylene eq.)	3,42E-05	-4,22E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPf**: Abiotic Depletion Potential (fossil)

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Table 19: **Nonset 400 SR** (packaged with multiply bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	8,62E-01	1,11E-02
RPEM	MJ	-	-
TPE	MJ	8,62E-01	1,11E-02
NRPE	MJ	1,90E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	1,90E+00	2,22E-01
SM	kg	2,04E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	9,55E-04	2,53E-04

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation;  
**TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier;  
**NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources;  
**SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels;  
**W** Net use of fresh water

Table 20: **Nonset 400 SR** (packaged with multiply bags) – Waste production & other output flows

Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,60E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,93E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed

Table 21: **Nonset 400 SR** (packaged with big bags) – Environmental categories

Environmental Category	Unit	A1 – A3	A4
 <b>GWP<sub>100</sub></b>	(kg CO <sub>2</sub> eq.)	3,25E-01	1,62E-02
 <b>ADPe (element)</b>	(kg Sb eq.)	1,95E-07	1,30E-09
 <b>ADPf (fossil)</b>	(MJ)	2,08E+00	2,22E-01
 <b>AP</b>	(kg SO <sub>2</sub> eq.)	3,29E-04	9,58E-05
 <b>EP</b>	(kg (PO <sub>4</sub> ) <sup>3</sup> -eq.)	1,63E-04	2,43E-05
 <b>ODP</b>	(kg R-11 eq.)	2,02E-09	5,39E-15
 <b>POCP</b>	(kg ethylene eq.)	3,83E-05	-4,23E-05

**GWP<sub>100</sub>**: Global Warming Potential; **ADPe**: Abiotic Depletion Potential (elements); **EP**: Eutrophication Potential; **AP**: Acidification Potential; **POCP**: Photochemical Ozone Creation Potential; **ODP**: Ozone Depletion Potential; **ADPf**: Abiotic Depletion Potential (fossil)

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Table 22: **Nonset 400 FF** (packaged with big bags) – Other environmental indicators

Environmental Indicator	Unit	A1-A3	A4
RPEE	MJ	7,94E-01	1,12E-02
RPEM	MJ	-	-
TPE	MJ	7,94E-01	1,12E-02
NRPE	MJ	2,13E+00	2,22E-01
NRPM	MJ	-	-
TRPE	MJ	2,13E+00	2,22E-01
SM	kg	2,03E-03	-
RSF	MJ	-	-
NRSF	MJ	-	-
W	m <sup>3</sup>	1,02E-03	2,54E-04

**RPEE** Renewable primary energy as energy carrier; **RPEM** Renewable primary energy as material utilisation;  
**TPE** Total use of renewable primary energy sources; **NRPE** Non-renewable primary energy as energy carrier;  
**NRPM** Non-renewable primary energy as material utilization; **TRPE** Total use of non-renewable primary energy sources;  
**SM** Use of secondary materials; **RSF** Renewable secondary fuels; **NRSF** Non-renewable secondary fuels;  
**W** Net use of fresh water

Table 23: **Nonset 400 SR** (packaged with big bags) – Waste production & other output flows

Output flow	Unit	A1-A3	A4
NHW	kg	0,00E+00	-
HW	kg	6,62E-03	-
RW	kg	0,00E+00	-
Components for re-use	kg	-	-
Materials for recycling	kg	4,94E-04	-
Materials for energy recovery	kg	-	-
Exported energy	MJ	-	-

**HW** Hazardous waste disposed; **NHW** Non Hazardous waste disposed; **RW** Radioactive waste disposed



Tables from 6 to 23 show absolute results for all the environmental categories considered. Calculations point out that module **A1** has the highest contribution for most environmental indicators (i.e. relative contribution in ODP is up to 99%).

Raw materials extraction and processing show the most relevant environmental load considering the whole life cycle of the finished product. In particular, the hydraulic binder and the fillers have the strongest influence on the results.

Transportation modules (**A2**, **A4**) give negative contributions to POCP due to NO and NO<sub>2</sub> emission factors (for more details, see the methodology used: HBEFA - Handbook Emission Factors for Road Transport).

The following tables show the relative contributions of the modules **A1 – A4**, and a detail on GWP<sub>100</sub> representative for the three products included in this EPD (Table 27).

Table 24: Environmental Impact as percentage – **Nonset 400** multiply bag

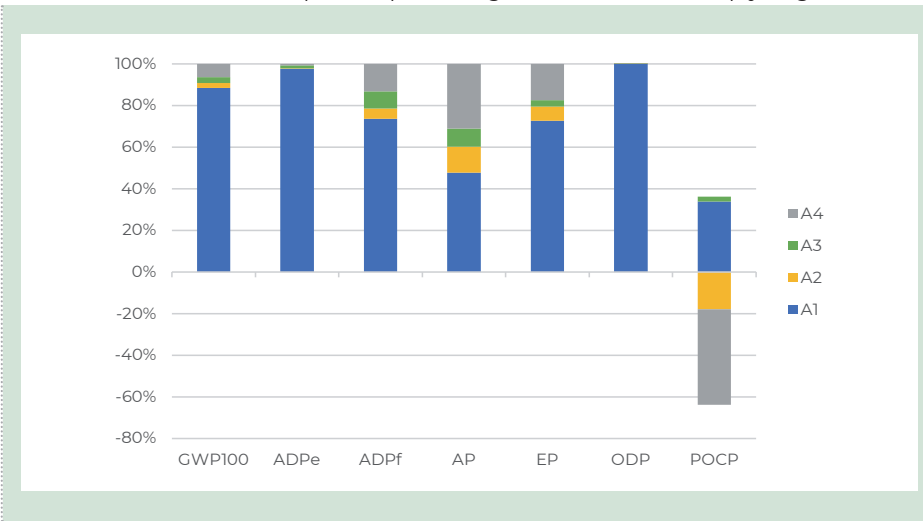
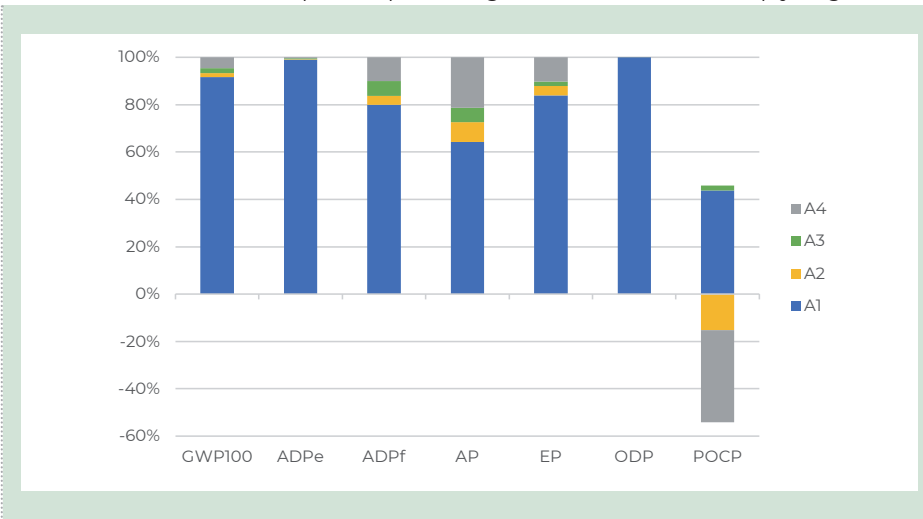


Table 25: Environmental Impact as percentage – **Nonset 400 FF** multiply bag



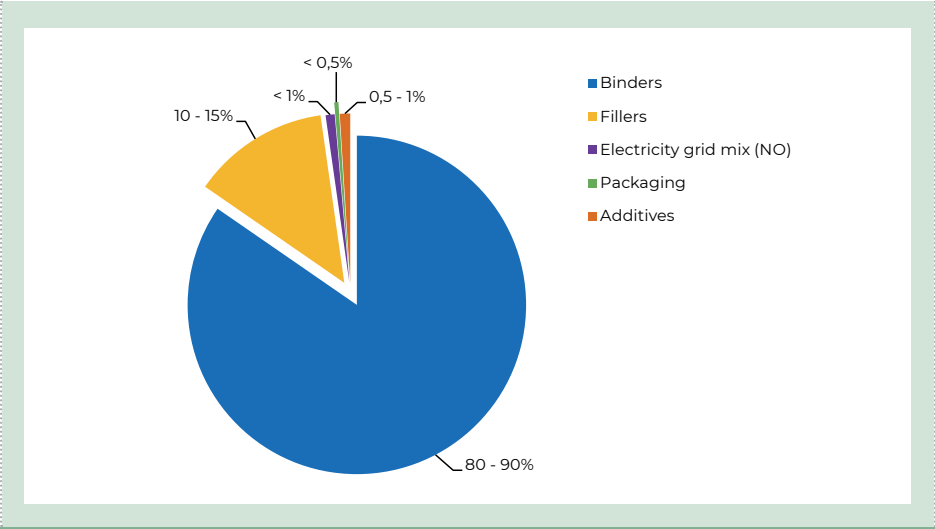
**Nonset 400**  
**Nonset 400 FF**  
**Nonset 400 SR**



Table 26: Environmental Impact as percentage – **Nonset 400 SR multiply bag**



Table 27: Detail on  $GWP_{100}$ : raw materials contribution



More details about electrical mix used in this EPD, is shown below:

	Data source	Amount	Unit
Electricity grid mix (NO) – 2013	GaBi (v6) database	0,0356	kg CO <sub>2</sub> -eqv/kWh

## 8. DATA QUALITY

Table 28 Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
<b>A1-A3</b>		
PTL binder	EPD NORGE: NEPD-1217-383-NO; NEPD 00023N rev1	2013 – 2020
Fillers (EU)	GaBi Database;	2016
Electricity grid mix (NO)	EcoProfile EPDLA	2013
Additives & Packaging components (EU)	GaBi Database; PlasticsEurope	2005 – 2016
<b>A2-A4</b>		
Truck transport (euro 3, 27-ton payload – GLO)	GaBi Database	2016
Oceanic ship (27500 DWT - GLO)	GaBi Database	2016
Diesel for transport (EU)	GaBi Database	2013
Heavy Fuel Oil (EU)	GaBi Database	2013

All data included in table above refer to a period between 2005 and 2020; the most relevant ones are specific from supplier, while the others (i.e. transport and minor contribution dataset), come from European and global databases.

All dataset are not more than 10 years old according to EN 15804 § 6.3.7 “Data quality requirements”. The only exception is represented by one raw material used for one packaging component production, coming from PlasticsEurope database.

Primary data concern the year 2018 and represent the whole annual production.

**Nonset 400**  
**Nonset 400 FF**  
**Nonset 400 SR**

## 9 SIGNIFICANT CHANGES FROM THE PREVIOUS VERSION

In this revision, new primary data and new formula for Nonset 400 SR (referred to the reference year 2018) have been used. The last update of the GPI v. 3.0 and PCR v. 2.3 have been considered.

Due to these updates, impact categories indicators have changed more than 10%.

## 10. VERIFICATION AND REGISTRATION

EPD of construction products may not be comparable if they do not comply with EN 15804. Environmental product declarations within the same product category from different programs may not be comparable.

CEN standard EN15804 served as the core PCR	
PCR:	PCR 2012:01 Construction products and Construction services, Version 2.2, 2017-05-30
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Massimo Marino Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>
Independent verification of the declaration and data, according to ISO 14025	<input checked="" type="checkbox"/> EPD Process Certification (Internal) <input type="checkbox"/> EPD Verification (external)
Third party verifier:	Certquality S.r.l. Number of accreditation: 003H rev14
Accredited or approved by:	Accredia
Procedure for follow-up of data during EPD validity involves third-party verifier	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



## 11. REFERENCES

- EN 1504-9 “PRODUCTS AND SYSTEMS FOR THE PROTECTION AND REPAIR OF CONCRETE STRUCTURES – DEFINITIONS, REQUIREMENTS, QUALITY CONTROL AND EVALUATION OF CONFORMITY - GENERAL PRINCIPLES”
- EN 1504-3 “REPAIR MORTAR FOR LOAD BEARING AND NONLAND BEARING REPAIRS, CLASS R4”
- EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 3.0
- HBEFA - HANDBOOK EMISSION FACTORS FOR ROAD TRANSPORT
- ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES
- ISO 14044 ENVIRONMENTAL MANAGEMENT – LIFE CYCLE ASSESSMENT – REQUIREMENTS AND GUIDELINES
- PCR 2012:01; “PRODUCT GROUP CLASSIFICATION: MULTIPLE UN CPC CODES CONSTRUCTION PRODUCTS AND CONSTRUCTION SERVICES”; VERSION 2.3

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**Nonset 400**  
**Nonset 400 FF**  
**Nonset 400 SR**

**SEDE**

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## ANNEX 1

### ANNEX 1: Self declaration from EPD owner

#### Specific Norwegian requirements

##### 1 Applied electricity data set used in the manufacturing phase

The electricity mix for the electricity used in manufacturing (A3) is the electricity grid mix

<0,0356 kg CO<sub>2</sub> eqv/kWh>

##### 2 Content of dangerous substances

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.
- The product contains substances that are less than 0.1% by weight given by the REACH Candidate or the Norwegian priority list.
- The product contains dangerous substances more than 0.1% by weight given in the REACH candidate list or the Norwegian Priority List, concentrations is given in the EPD:

Dangerous substances from the REACH candidate list or the Norwegian Priority List	CAS No.	Quantity (concentration, wt%/FU(DU)).

##### 3 Transport from the place of manufacture to a central warehouse

Transport distance, and CO<sub>2</sub>-eqv./DU from transport of the product from factory gate to central warehouse in Oslo shall be given. The following table shall be included in the EPD:

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy use	Unit	Value (l/t)	Kg CO <sub>2</sub> -eqv./DU
Boat							
Truck	85	27 tonn, EURO 3	95	0,0182	l/tkm	4,56	1,37E-02
Railway							
Rail							
Air							
Total	85	27 tonn, EURO 3	95	0,0182	l/tkm	4,56	1,37E-02

#### 4 Impact on the indoor environment

- Indoor air emission testing has been performed; specify test method and reference:
- No test has being performed
- Not relevant; specify : the product is a mortar for foundation and concrete repair. It does not affect the indoor air quality.

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